

## **REMARKS**

The Office Action dated March 31, 2009, rejects claims 1-22, 24, and 36-40 under 35 U.S.C. 103(a) as being unpatentable over Martin (U.S. Patent No. 5,368,594, "Martin") in view of Vignaud (U.S. Patent No. 5,176,680, "Vignaud") in further view of Schlapfer (U.S. Patent No. 5,501,684, "Schlapfer") and in further view of Petreto (U.S. Patent 5,938,663, "Petreto"). Claims 1-22, 24, and 36-40 remain pending; no amendments have been made.

For all of the following reasons, Applicant respectfully requests reconsideration and early allowance of the pending claims.

### **Interview Summary**

Applicant thanks Examiners Waggle and Swiger for the courtesy extended during a personal interview with Applicant's representatives, Elizabeth Burke and Arpita Bhattacharyya, on September 15, 2009. During the interview, Applicant's arguments for combination of the Martin and Vignaud references were discussed. The structure of the cap and cavity in the screw head with regard to the allowance of angular clearance, and in particular the lateral recesses provided in the cavity, were also discussed.

### **Claim Rejections under 35 U.S.C. § 103(a)**

The Office Action rejects claims 1-22, 24 and 36-40 under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Vignaud in further view of Schlapfer and in further view of Petreto.

The Office Action asserts that the combination of Martin, Vignaud, and Schlapfer discloses and teaches all of the elements of claims 1-22, 24, and 36-40, except for the cavity of the head allowing for angular adjustments of the pin in multiple planes prior to immobilization, for which the Office Action cites Petreto. The Office Action alleges that Petreto teaches a device which allows orientation of the pin in multiple planes by allowing clearance in all directions about the rod, and states that "it would have been obvious to one having ordinary skill in the art to design the combination of Martin et al., Vignaud et al., and Schlapfer et al. with the ability to allow other planes of angulation as a matter of mere substitution for the single planar angulation taught by Vignaud et al. with predictable results." See Office Action at p. 4.

Applicant respectfully traverses this rejection, and maintains that Martin, Vignaud, Schlapfer and Petreto, either alone or in combination, do not disclose each and every element of independent claims 1 and 12.

Claim 1 requires in part that "the cavity of each screw head includes an inner surface having a partially spherical contour bordered on either side by a lateral recess, wherein the lateral recesses and the partially spherical contour allow angular adjustments in multiple planes of the at least one pin with respect to the at least one screw prior to immobilization of the pin." None of the cited references teach, disclose or suggest any lateral recesses in the cavity delimited by the head of the screw, nor do they provide any motivation to include such lateral recesses in the head to allow angular clearance in multiple directions.

Applicant asserts that the lateral recesses in the cavity of the head, as claimed, provide angular clearance to the pin in multiple planes. The lateral recesses work in conjunction with the spherical contour of the cavity and the spherical ring to enable angular adjustment of the pin in the median (vertical) plane and the transverse (horizontal) plane, and thus, allow better alignment of the vertebral arthrodesis device.

In contrast, Vignaud discloses angular clearance of the rod in only the median plane, which is referred to as the sagittal plane, through the recess 15 at the bottom of the housing 5, and the truncated section 16 of the locking screw 7. See Vignaud at col. 1, l. 35-40, and col. 2, l. 54-59. Vignaud does not disclose or suggest lateral recesses in the head cavity. Therefore, mobility of the rod in any plane, except the vertical plane, would be clearly restricted by the branches 4a, 4b of the diapason-shaped head. Martin, on the other hand, does not disclose or suggest angular adjustments of the pin at all, nor does Martin disclose or suggest lateral recesses. Martin's osteosynthesis device is simply intended for easy, snap-on installation, and does not provide any structure or mechanism for alignment of the pin prior to immobilization. Further, Schlaffer, which the Office Action appears to have cited only based on the structural features of the ring, does not disclose the lateral recesses, or angular adjustments of a rod in multiple planes, and therefore, does not cure the defect in the rejection based on Martin and Vignaud.

The Examiner alleges that Petreto teaches a device which allows orientation of the pin in multiple planes by allowing clearance in all directions. Applicant respectfully disagrees with the Examiner, and asserts that while Petreto does disclose adjustments

in multiple planes, Petreto does not disclose or suggest "an inner surface having a partially spherical contour bordered on either side by a lateral recess, wherein the lateral recesses and the partially spherical contour allow angular adjustments in multiple planes of the at least one pin with respect to the at least one screw prior to immobilization of the pin." Petreto simply teaches a compressible ring in a cylindrical cavity, which forms a ball joint, and allows minimal motion to the rod in all directions. See Fig. 2 of Petreto. Petreto does not disclose, teach or suggest lateral recesses in the cavity of the head that facilitate multiple plane angulations.

Therefore, Martin, Vignaud, Schlapfer and Petreto, alone or in combination, do not teach each and every element of claim 1. It is respectfully requested that the rejection of claim 1 be withdrawn for the above-stated reasons. Claims 2-11 and 36 depend from claim 1, and thus are patentable over Martin, Vignaud, Schlapfer and Petreto for at least the same reasons as claim 1.

With regard to independent claim 12, Applicant maintains that claim 12 requires in part that "the at least one cap being configured to provide angular clearance to the at least one pin in multiple planes." None of the cited references disclose or suggest that the cap (or any other structure provided to contact and secure the ring within the cavity) is configured to allow angular adjustment of the pin in multiple directions, nor do they suggest any reason that such a modification would be desirable or successful.

The Office Action alleges that Petreto teaches a device which allows orientation of the pin in multiple planes by allowing clearance in all directions. Applicant respectfully disagrees with the Office Action, and reasserts that while Petreto does

disclose adjustments in multiple planes, Petreto does not disclose or suggest “the at least one cap being configured to provide angular clearance to the at least one pin in multiple planes.”

First, Petreto does not disclose a cap, or any other equivalent structure, for securing the connecting rod 27 to the bone anchor member 1. Petreto simply discloses a clamp 9, which houses a compressible ring 24, through which the rod 27 is connected. Second, the cylindrical lateral portions 22 in the interior cavity 20 of clamp 9 and the ring 24 are configured to limit the angular movement of the ring and the connection rod 27. Specifically, the ring 24 includes external cylindrical portions 29, as shown in FIG. 7 of Petreto, which bear on the cylindrical walls 22 of clamp 9 to limit the angle of rotation of the rod 27.

The external face of the ring has a central spherical enlargement 28 the top of which is inserted in the unclamped position of the clamp 9 into the interior cavity 20 delimited by the central portion 21, the spherical enlargement 28 being extended on each side by two externally cylindrical portions 29 forming annular abutments so that, in the unlocked position, the angle of the axis of the ring 24 is limited by the annular abutments bearing on the walls of cylindrical lateral portion 22 of the interior cavity 20.

Petreto, col. 4, l. 5-14, (emphasis added).

Therefore, Petreto does not disclose or suggest at least the limitation “the at least one cap being configured to provide angular clearance to the at least one pin in multiple planes,” as recited in claim 12. In fact, Petreto discloses structures in the clamp 9 which are intended to limit the angular movement of the rod in multiple planes.

The other cited references, *e.g.*, Martin, Vignaud and Schlapfer, do not overcome this deficiency of Petreto. Martin and Schlapfer do not disclose or suggest any structure to provide angular clearance to the pin, whereas the cap 8 of Vignaud is configured to provide clearance to the pin in only the vertical plane, as discussed earlier. Therefore, Martin, Vignaud, Schlapfer and Petreto, alone or in combination, do not disclose or suggest each and every element of claim 12.

It is respectfully requested that the rejection of claim 12 be withdrawn for the above-stated reasons. Claims 13-22, 24 and 37-40 depend from claim 12, and thus are patentable over Martin, Vignaud, Schlapfer and Petreto for at least the same reasons as claim 12.

Applicant notes that claim 39 depends from claim 12 and further describes some features of the cap that provide angular clearance. For example, claim 39 recites that "the at least one cap includes two lateral spherical recesses configured to provide angular clearance of the at least one pin in multiple planes." Other dependent claims describe this feature as found in the cavity of the head of the screw. For at least the reasons discussed above with regard to claim 1, the prior art of record does not disclose these features. For at least this additional reason, reconsideration is requested.

**CONCLUSION**

In view of the foregoing remarks, Applicant respectfully requests reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

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